90962

NOAA Technical Memorandum NMFS-SEFSC-412

PROCEEDINGS OF THE SIXTEENTH ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION

28 February - March 1, 1996
Hilton Head, South Carolina

Compilers:

Richard Byles
and
Yvonne Fernandez

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149

March

1998

NOAA Technical Memorandum NMFS-SEFSC-412

PROCEEDINGS OF THE SIXTEENTH ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION

28 February - March 1, 1996
Hilton Head, South Carolina

Compilers:

Richard Byles
and
Yvonne Fernandez

U.S DEPARTMENT OF COMMERCE
William M. Daley, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
D. James Baker, Administrator

NATIONAL MARINE FISHERIES SERVICE
Rolland A. Schmitten, Assistant Administrator for Fisheries

March

1998

MARINE DEBRIS INGESTION BY SEA TURTLES IN SOUTH TEXAS: PRE- AND POST-MARPOL ANNEX V

Donna J. Shaver and Pamela T. Plotkin

National Biological Service, Padre Island National Seashore, 9405 S. Padre Island Drive, Corpus Christi, Texas 78418

Drexel University, Department of Bioscience and Biotechnology, 32nd and Chestnut Streets, Philadelphia, Pennsylvania 19104

MARPOL ANNEX V, put into force internationally on December 31, 1988, prohibits dumping of any plastics from ships at sea and sets standards for disposal at sea of other solid wastes. This study was undertaken to determine if the frequency or amount of marine debris ingested by sea turtles decreased after implementation of MARPOL ANNEX V (post-MARPOL).

Entire gut contents were analyzed from 473 dead turtles found stranded along the south Texas coast, in inshore and offshore areas, in shrimp statistical zones 19-21, between 1983 and 1995. Debris comprised less than 1% of the gut content dry mass of most turtles. Debris was the primary cause of death of 7 of the 473 turtles analyzed, including 2 from large fishing hooks, 1 from a piece of glass, 1 from a long piece of monofilament line, and 3 from gut obstruction by large amounts of plastic. However, those killed by hooks and monofilament line probably died because they were previously caught by hook-and-line and the line was cut.

The 473 analyzed included 57 head started turtles (47 found inshore and 10 found offshore) and 416 non-head started (wild) turtles (70 found inshore and 346 found offshore). The 57 head started Kemp's ridleys (Lepidochelys kempii) were restricted from further analysis after determining that a significantly higher proportion of those found offshore had consumed debris than had wild Kemp's ridleys found offshore (Test for Comparing Binomial Proportions [TBP], $P<0.05$). The 70 wild loggerhead (Caretta caretta), Kemp's ridley, and green (Chelonia mydas) turtles found inshore were also restricted after determining that significantly lower proportions of them had consumed debris than had their counterparts found offshore (TBP's, $P<0.05$).

The remaining 346 wild turtles found offshore were used for comparison of pre-and post-MARPOL marine debris ingestion. Among the 346 were: 164 loggerheads, 103 Kemp's ridleys, 47 greens, 27 hawksbills (Eretmochelys imbricata), and 5 leatherbacks (Dermochelys coriacea); 155 were pre-MARPOL (1983 - 1989) and 191 post-MARPOL (1990 -1995). The proportions of turtles that had ingested debris were not significantly different pre- and post-MARPOL, for each species and all species combined (TBPs, $P>0.05$). The median percent dry mass and median weight of ingested debris items were not significantly different pre- and post-MARPOL, for loggerhead, Kemp's ridley, and green turtles (Mann Whitney Rank Sum Tests, $P>0.05$). For each species, the proportion of turtles containing ingested debris did not decrease throughout the study years.

During pre- and post-MARPOL periods combined, 51.7% of the 346 wild turtles found offshore had ingested debris and debris comprised 0.16% of their gut content dry mass. The % frequency of debris ingestion was highest for greens and hawksbills and the percent dry mass of debris was much higher for hawksbills than for the other species. The percent frequency of debris ingestion was highest for turtles measuring less than 40 cm curved carapace length. A reduction in the percent frequency of debris ingestion with increasing size was found for Kemp's ridley but not for any of the other species. Pre- and post-MARPOL, and during both periods combined, 42% of the turtles analyzed contained ingested plastics. The most common debris items found ingested by the wild turtles that stranded offshore were plastic bags, sheets, fragments, and straps. Although most of the ingested debris was clear or white, items of a wide variety of colors were consumed.